

Abstract Submitted
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Non-perturbative calculations for electron-impact ionization of low charge states of tungsten¹ C. J. FAVREAU, S.D. LOCH, D.A. ENNIS, C.A. JOHNSON, M.S. PINDZOLA, Auburn Univ, C.P. BALLANCE, R. SMYTH, Queen's Univ. of Belfast — Tungsten is a leading material for plasma facing components in future burning plasma devices. Accurate atomic data for low charge states of tungsten will be necessary, for spectroscopic diagnosis of the divertor region and to gauge wall material erosion rates. A relativistic, non-perturbative R-matrix electron-impact excitation calculation has recently been completed for neutral tungsten. In conjunction with reliable electron-impact ionization data, this calculation enables the determination of S/XB ratios and by extension erosion rates. We present new R-matrix electron impact ionization calculations for ground and select metastable terms of W I, W II, and W III along with comparisons to recent configuration-averaged Time-Dependent-Close-Coupling calculations converted to LSJ-resolution using appropriate angular factors. When the ionization cross sections and rate coefficients are compared to the currently used results from Exchange Classical Impact Parameter and Coulomb Born methods, sizeable differences are found.

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